The Early and Middle Pleistocene archaeological record of Greece : current status and future prospects

Tourloukis, V.

Citation

Tourloukis, V. (2010, November 17). *The Early and Middle Pleistocene archaeological record of Greece : current status and future prospects*. *LUP Dissertations*. Retrieved from https://hdl.handle.net/1887/16150

2 – Lower Palaeolithic archaeology and the peopling of Europe

2.1 THE LOWER PALAEOLITHIC PERIOD: AN INTRODUCTION

According to the traditional division of the Palaeolithic, the period discussed in this study is called the Lower Palaeolithic and its lower limit is anchored to the appearance of the earliest manifestations of human culture. The latter proposition is burdened with problems in the definition of each one of its components: the adjective 'earliest' refers to a floating chronological bracket; 'human culture' is difficult to define, because both concepts are identified on the basis of criteria that may be characterizing other species as well; whilst 'manifestation' also depends on how the former two terms (human and culture) are outlined and how much detectable they are in archaeological terms. That being said, what is commonly considered as the oldest known evidence of hominin stone-tool technology and possible carnivory appears at around 2.6 Ma in Africa, where clusters of lithic artefacts (see below) were found together with animal bones (Semaw *et al*. 2003). The first members of *Homo* are generally thought to have emerged around this time, which is effectively regarded as the onset of the Lower Palaeolithic (*e.g*. Klein 2009). However, we do not know exactly which species is responsible for the first stone-tool manufacture, because during the earliest part of the Early Pleistocene, probably more than two hominin genera and six species were present in Africa (*e.g*. Wood and Collard 1999). In fact, not only it is difficult to prove that *Homo* was the only tool-making genus at that time, but also the conventional criteria for assigning a species to the *Homo* genus (*e.g*. human-like precision grip and tool-making ability, brain size and 'language') are now deemed unsatisfactory (ibid). Such issues remain unsettled and highly controversial (*e.g*. Cela-Conde and Ayala 2003; Tattersall and Schwartz 2009), but are not of primary concern here. Thus, in line with the prevailing view, I consider the datum of 2.6/2.5 Ma as the lower boundary of the Lower Palaeolithic period.

On the current evidence, we assume that it was at around the beginning of the Pleistocene (*i.e*. at *ca*. 2.5 Ma; for the Pliocene-Pleistocene boundary see below) when members of the *Homo* lineage developed larger crania and brains, incorporated a more carnivorous diet and produced an archaeologically visible material culture. The latter is exemplified by the Oldowan lithic industry and consists of crude and informal artefacts, including simple flakes, cores, bifacial choppers, chopping-tools and scrapers. While this industrial complex persisted for more than a million years, it was at *ca*. 1.8 Ma that the first hominin species with a more human-like body form enters the scene, also carrying with it (from *ca*. 1.5 Ma onwards) a more refined tool-kit, the Acheulean Industrial Complex, consisting of bifacially worked tools such as handaxes, cleavers and picks (*e.g*. Clark 1994; Klein 2000). This hominin, known as *H. ergaster* (for the African variants) and/or *H. erectus* (*sensu lato*, or *sensu stricto* for the Asian types) is the earliest one that meets all of Wood and Collard's (1999) criteria for a membership in the genus *Homo*, and it has for long been considered as the first one capable of migrating out of Africa and into Eurasia (but see below). Long-lasting controversy surrounds the morphological variability in fossils included within the *H. ergaster / H. erectus* hypodigm(s), and *H. ergaster* remains until today "absolutely without precedent" (Tattersall and Schwartz 2009, 74). Nonetheless, some European specimens that were once classified as (late) *H. erectus* are now considered to belong to *H. heidelbergensis*, the species that appears in Africa and western Eurasia in the first half of the Middle Pleistocene. Again, it is not clear when or where exactly *H. heidelbergensis* first appeared and what is its phylogenetic relationship with earlier, penecontemporaneous and later hominins; for a long time, numerous specimens that retain some more primitive (*erectus*-like) features but also share a number of derived ones with modern humans, have been referred to as 'archaic *H. sapiens*', a term that has been lately replaced by the revived nomen *H. heidelbergensis*. Some researchers see *H. heidelbergensis* as an Afro-European species giving rise to both Neanderthals and modern humans; others consider it as an exclusively Eurasian chronospecies ancestral to Neanderthals while another, African form (*H. rhodesiensis*) led to modern humans; there is also the view that there can be no clear divide between *H. heidelbergensis* and *H. neanderthalensis* (*e.g.* Hublin 2009 and references therein; Mounier *et al*. 2009). A newly proposed species, *H. antecessor*, was initially seen as the common ancestor of Neanderthals and modern humans, and/or as an antecedent of *H. heidelbergensis*, but lately it is suggested that it represents a European lineage different from other African and Asian ones, perhaps not leading to Neanderthals (*e.g.* Carbonell *et al*. 2005; Bermudez de Castro *et al*. 2008). However, it might equally represent an unsuccessful dispersal event into Europe (Tattersall and Schwartz 2009).

Whichever hominins were involved in the earliest incursions into Europe, it appears that biological and cultural innovations need not occur in phase. In the European Middle Pleistocene, there is a great morphological variation reflected in fossil specimens, and a complex set of cultural variability mirrored in lithic assemblages; temporal and spatial discontinuity in the records obstruct correlations between certain species and specific lithic complexes. Alternatively, important cultural advances that are introduced during the Middle Pleistocene may in the future prove to be associated with a hominin form, which on the current terminology would be included within *H. heidelbergensisis* (*sensu lato*). Besides exceptions of controversial status such as *H. cepranensis*, named after a calvarium that was found at Ceprano, Italy (lately dated to *ca*. 0.45 Ma; Mallegni 2006; Muttoni *et al*. 2009); and excluding (undetermined) fossils referring to 'ante'-, 'early' or 'pre-Neanderthals', *H. heidelbergensis* is the most commonly identified species in Europe for the time-span between *ca*. 600-200 ka. Without implying any conclusive linking, it is noteworthy that the 'Middle Pleistocene Transition', marking a change in the amplitude and length of the glacial-interglacial cycles (Head and Gibbard 2005; see section 6.2), is centered close to the time when *H. heidelbergensis* first appears in the European landscapes (*ca*. 600 ka at Sima de los Huesos). After about 500 ka, the archaeological record becomes more substantiated, compared to the pre-500 ka periods. It is also around this time that the second major expansion of the brain is observed in hominins, when brain size increased to its modern level (*e.g.* Aiello and Wheeler 1995). Similarly, it is with *H. heidelbergensis* that body size and body mass enter the range of modern *H. sapiens*, which could be suggesting that the evolution of modern-like life history began essentially at this point in the human lineage (Dubreuil 2010; *cf.* Aiello and Dunbar 1993). Furthermore, after this critical datum of *ca*. 500 ka, we begin to find more solid (albeit not always uncontested) evidence for some important aspects of hominin social life: hunting, manipulation of fire, cooking, as well as possible forms of dwelling structures (*e.g.* Thieme 1997; Preece *et al.* 2006; Carmody and Wrangham 2009; *cf.* McNabb 2007, 346-373). The oldest-known examples of the Acheulean industrial complex appear in Europe around this time-line, too (but see Villa 2001 and Scott and Gibert 2009). Although *H. heidelbergensis* was perhaps as much culture-dependent as its alleged predecessor (*H. ergaster*), I agree with McNabb (2005) that they both used the tool-making component of their material culture in processing activities mostly; their success in colonizing new areas was likely based on biological and behavioral attributes other than technological dependency. For instance, using the aforementioned evidence for biological/cultural innovations (brain growth, hunting and use of fire) Dubreuil argues that *H. heidelbergensis* was engaged in riskier and longer-term cooperative goals than earlier hominins in the domains of feeding and breeding; and that "this change was made possible by the presence of a modern-like capacity on the part of the individuals to assess the risks of cooperation and to stick to cooperative arrangements" (2010, 55). In studies like the latter, the argumentation is in varying degrees inferential and not directly verifiable upon the archaeological record. But when they are complementary to other lines of evidence, such studies can offer valuable alternatives to long-lasting problems: for instance, the thorny issue of cultural periodizations and the question of how solid definitions of periods are, when they are chiefly based on lithic typo-technological criteria.

Distinguishing cultural periods in (pre)history is essentially inescapable and it has been habitually grounded on the identification of transitions separating certain time-blocks. Transitions are artificial constructs that are used to structure the study of the past and facilitate inter- and intra-disciplinary communication between scholars; as soon as transitions and periodizations are perceived as consolidated 'realities', immune to reassessments, their function as analytical tools is cancelled and even reversed (*cf.* Roebroeks and Corbey 2001). It is thus understandable that, following earlier suggestions, some scholars prefer to use the term 'Early Palaeolithic' to include both the Lower and the Middle Palaeolithic period (*e.g.* Runnels and van Andel 2003). Traditionally, the Lower/Middle Palaeolithic boundary is set at around 300 ka and is marked by the appearance of the Levallois technique. Recently, Monnier (2006) described in detail how the staging of the European Palaeolithic has been historically based on the use of a *fossil directeur* approach; she shows that from the very beginning, with de Mortillet's classification, up to the Bordesian typological scheme and the subsequent technological methodologies, the Lower and Middle Palaeolithic stages have been set apart according to the presence/absence of lithic 'index fossils', namely bifaces and Levallois products, the latter usually included in flake-tool-based industries. Monnier analyzed 89 assemblages from 26 radiometrically-dated sites of Western Europe, spanning OIS 17 to 3. Her results showed that although there is a significant drop in biface frequency from OIS 9 to 8, bifaces do not disappear, hence they are useless as chronological markers; Levallois technology is almost entirely absent until OIS 8, becoming full-blown only in OIS 6. In construing her data, Monnier states that "the appearance of Levallois technology *could* be used to distinguish the Lower from the Middle Palaeolithic, but then this boundary would have to be moved to the beginning of OIS 6 or somewhere within OIS 7, when Levallois technology becomes numerically significant" (ibid, 729).

As implied in the title and stated in the introduction, my examination of the Greek record focuses more on stratigraphically-supported arguments and less on typological ascriptions. In this view, I consider the beginning of the Late Pleistocene as the upper limit for the record under study. The choice of this datum is largely arbitrary, but it is supported by the fact that, on the current evidence, the oldest-known so far dated Greek Middle Palaeolithic site and/or the earliest appearance of the Levallois technique in Greece is placed around *ca.* 130 ka and most probably within the time-span of the last interglacial period (at Theopetra Cave; see 4.1; Valladas *et al*. 2007). Consequently, at least for the time being, this limit can be overall regarded as a culture-stratigraphic boundary. Opting for the presence of the Levallois method as an assistive tool in discerning here the onset of the Middle Palaeolithic has two practical advantages. Firstly, it is in line with most current views for the commencement of the Middle Palaeolithic in both the Mediterranean and the rest of Europe (*e.g.* Roebroeks and Tuffreau 1999; Mussi 2001; White and Ashton 2003); as such, it allows the exclusion of what is currently conceived as the Greek Middle Palaeolithic record, which, if included, would disorientate the scope of this research; additionally, it also allows the results of this study to be comparable with evidence from other Lower Palaeolithic records. Secondly, due to practical constraints and because this is not part of my research objectives, an assessment of the Lower/Middle Palaeolithic periodization in Greece could not be elaborated here.

Yet, there are many drawbacks in using the Levallois technique for such a purpose. For the definition, identification and interpretation of the Levallois technique, the reader is referred to Chazan (1997) and White and Ashton (2003), whilst Bar-Yosef and Van Peer (2009) provide a recent critique on and review of the methodological and epistemological problems in typo-technological systematics. Here, suffice to acknowledge the following points:

1. the appearance of the Levallois technique has most likely been temporally gradual and spatially discontinuous, depending on geographical and geomorphological settings (among many other factors)

2. artefacts with Levallois morphology can be made with multiple methods and not necessarily on a Levallois core (*e.g.* Chazan 1997)[1]
3. the discreteness of the Levallois method from the discoid method has been questioned, and it has to account for the fact that
4. the morphology of a core reflects the last stage of the core's reduction sequence; in effect,
5. identifying the presence/absence of the Levallois technique requires an adequate sample, in which at least cores will not be underrepresented -a situation that is hardly met and/or barely demonstrable in the case of surface collections.

These Levallois-pitfalls are anticipated here. However, it should be noted that if the nature and meaning of a Lower/Middle Palaeolithic dichotomy is to be re-assessed, caution should be taken before downgrading the importance of the development of prepared-core-technologies. The Levallois technique incorporates the conceptual and practical fusion of two basic reduction methods, *façonnage* and *débitage*, which were practiced in the Lower Palaeolithic as separate, alternative strategies (White and Ashton 2003); the fusion of these two distinct operational systems has been called 'the incorporation of difference' (Hopkinson 2007). According to Hopkinson (ibid) this incorporation develops in Europe from *ca.* 200 ka onwards and coincides with the onset of systematic occupation of high-relief upland regions; together, these advancements signal behavioral and cognitive evolutionary changes. Interestingly, whilst Hopkinson focuses more on eco-geographical factors, such as spatio-temporal resource proximity, landscape structure and seasonality, he arrives at the same conclusion as Monnier (2006) in suggesting the datum of *ca.* 200 ka for the Lower/Middle Palaeolithic boundary.

In sum, considering all the above (*i.e.* the practical limitations within the scope of this research, and the debate around the Lower/Middle Palaeolithic boundary), the archaeological evidence examined here involves the time-period between 2.58 to 0.126 Ma, namely the Early and Middle Pleistocene (see below). For the current purposes, this time-block is taken to represent what is conventionally called the Lower Palaeolithic period. Although the datum of ~200 ka is considered here as a (provisionally) justifiable datum-line for the Lower/Middle Palaeolithic boundary, I prefer to place the latter slightly later, at *ca.* 126 ka, *i.e.* at the beginning of the last interglacial, because it matches both the archaeological testimony at hand (earliest-dated Middle Palaeolithic site in Greece) and the geological consensus for the beginning of the Late Pleistocene. Finally, it is also noted here in brief that on the basis of technological, behavioral and cognitive indications from the European records, the period between *ca.* 400-200 ka is expected to be a reasonable candidate as the transitional phase between the Lower and the Middle Palaeolithic of Greece.

As a final note, it should be mentioned that the base of the Quaternary Period and the Pleistocene Epoch has recently been lowered to 2.58 Ma, to be coincident with the base of the Gelasian Age. The ratification of the proposal for a revision of the base-Quaternary boundary was published on June 30th 2009 (the official announcement can be found at www.stratigraphy.org), that is, when this book was reaching its final form. As a consequence, both the works of others that are cited here and my own assessments should be treated with reference to the previously defined Pliocene-Pleistocene boundary at 1.8 Ma, unless a reference to the new boundary is explicitly stated. This revision has important implications, *e.g.* regarding the vague term 'Plio-Pleistocene' and the Villafranchian mammal stage, but it was not possible to resolve such issues here. On the positive side, the revised boundary matches not only the earliest-dated stone-tool assemblage in Africa, but also the first significant changes in the climate system and the associated biotic responses. It has been suggested that those major global changes may have had fundamental impacts on human evolution, perhaps also triggering and/or facilitating the earliest human dis-

---

[1] For instance, in their analysis of the Dmanisi material, Baena *et al*. (2010) comment on cores with a more complex organization of the scars and note the following: "From a typological view of their morphologies, those could be considered as discoid cores or even levallois. On the contrary, a detailed analysis with a diachritical study shows that those are not generated with a levallois method (as understood by Boëda, 1993), even if their volumetric structure looks similar."

persals –a topic that is overviewed in the next chapter.

2.2 EARLY DISPERSALS AND THE FIRST OCCUPATION OF EUROPE

Due to the difficulty in identifying push- and pull-factors or distinguishing prime drivers, the earliest human dispersals within the Old World have been interpreted on the basis of various competing or converging hypotheses, which are often interrelated and integrate multi-disciplinary investigations. With only few exceptions challenging the consolidated paradigm of Africa being the cradle of humankind (*e.g.* Dennel and Roebroeks 2005), different causes and constraining/facilitating parameters underlying hominin range expansions have been addressed.

From *ca.* 2.5 Ma, the build-up of continental ice-sheets signifies the onset of the Quaternary glacial-interglacial cycles, with considerable implications on human evolution. Shifts to more arid conditions at 2.8, 1.7 and 1.0 Ma have been for long thought to have conditioned the emergence of bipedal, large-bodied hominins by creating new environmental niches; however, recent studies show that those key temporal junctures are linked with extreme climate variability on high moisture levels (Trauth *et al.* 2009). Alternatively, some researchers argue that climatic deterioration impeded human expansion into Europe: the first European settlement was possible only under mild climatic conditions, whilst physiography or cultural factors were of secondary importance (Agusti *et al.* 2009). In a stepping-out-of-Africa simulation, the late arrival of hominins in Europe (around 1.0 Ma; see below) is explained by mid-latitude vegetation being a barrier that led to the formation of scattered populations; in this model, the role of vegetation and the hominin ecological niche are highlighted (Hughes *et al.* 2007a). Other researchers focus more on 'culture-specific' aspects, such as hominin social life (*e.g.* Gamble 1999), or associations of dispersal events with certain technical (lithic) systems (*e.g.* Carbonell *et al*. 1999); whilst others prefer more holistic perspectives, combining biological relationships (body size, brain size, thermoregulation, diet shift to increasing carnivory, life history factors) with ecological and biogeographical approaches (*e.g.* Roeboreks 2001, 2006). The subject is obviously too complex to be reviewed here (see *e.g.* Rolland 2010 for a recent overview), so the focus will be on three main issues, as the most relevant to the potential role of Greece in this debate: chronological frameworks, the archaeological patterning (spatio-temporal distribution of sites, continuity of occupation, dispersal routes), and taphonomic/preservation biases.

Currently, the earliest known and best-studied site in Eurasia is Dmanisi in Georgia, dated to *ca.* 1.8 Ma (Fig. 2.1); it has provided a morphologically variable hominin fossil material, which falls between *Australopithecus* and *H. habilis* on one hand and *H. ergaster* and *H. erectus* on the other (Martinón-Torres *et al.* 2008), or is even attributable to a new species (*H. georgicus*; Gabunia *et al.* 2002), and is associated with a Mode I ('Oldowan-like') lithic assemblage (Baena *et al.* 2010). In Europe, the oldest direct evidence for a human presence is attested at Sima del Elefante (Atapuerca, Spain) by fossils possibly representing the precursors of *H. antecessor* (perhaps signaling a speciation event), again associated with a core-and-flake lithic industry, and dated to *ca.* 1.2-1.1 Ma (Carbonell *et al.* 2008). Barranco Leon and Fuente Nueva, located also in the Iberian Peninsula, have yielded Mode I assemblages dating to *ca.* 1.4-1.2 Ma, whilst 'Ubeidiya in the Levant dates to *ca.* 1.5 Ma (see chapter 3). If we exclude the Asian record from this consideration (*e.g.* see Dennell 2003), it is only the above five sites that provide solid and well-dated artefactual and/or fossil evidence for a human occupation of Europe and its periphery before *ca.* 1.0 Ma. And yet, based on this sparse evidence, or, even worse, on sites with a doubtful archaeological testimony or inconclusive datings, some scholars have suggested that at least two (Carbonell *et al.* 1999) or three (Bar-Yosef and Belfer-Cohen 2001) distinct waves of migrations are identifiable in the record; in these scenarios, Mode I (core-and-flake) and Mode II (Acheulean) assemblages are associated with different groups of hominins performing the technologically-culturally discernible, successive dispersal events. This view, and especially the association of lithic complexes with specific phylogenetic groups, has been convincingly disproved (*e.g.* Villa 2001; McNabb 2007). Moreover, genetic evidence indicates at least three major expansions out of Africa (Templeton 2002).

Fig. 2.1 Key Lower Palaeolithic sites of the circum-Mediterranean region and possible routes of early dispersals. Sites: 1) Dmanisi 2) Yarimburgaz 3) Dursunlu 4) Kaletepe Deresi 5) Karain 6) Kozarnika 7) Monte Poggiolo 8) Isernia 9) Notarchirico 10) Atapuerca sites (Trinchera Dolina, Sima del Elefante, Sima de los Huesos) 11) Torralba and Ambrona 12) Orce sites (Fuente Nueva 3, Barranco León) 13) Sites in the Casablanca area (Thomas Quarry I, Grotte des Rhinocéros) 14) Ain Hanech and El-Kherba 15) 'Ubeidiya and Gesher Benot Ya'aqov

Whereas the circum-European record becomes slightly enriched at around 1.0 Ma, it is only in the Middle Pleistocene and most notably from its middle part onwards, that it is significantly substantiated, both quantitatively and qualitatively: in marked contrast to the preceding period, after *ca.* 600/500 ka the European evidence is characterized by larger collections of lithic material (often conjoinable and from 'knapping floors'), more primary-context sites, more uncontested artefactual assemblages, and more human remains (Roebroeks and van Kolfschoten 1994). This sort of threshold most probably indicates "repeated, short-lived and modest dispersal events, rather than continuous residence" before *ca*. 600 ka (almost certainly so before 1.0 Ma: Dennell 2003, 434), with a more continuous presence becoming evident only after this datum-line. As this pattern cannot be discussed here (see *e.g.* Roebroeks 2006), suffice it to recall that the aforementioned 'threshold'[2] largely coincides with the mid-Pleistocene (climatic) transition and it may be reflecting biological and behavioral traits linked with *H. heidelbergensis*; in that sense, it is the latter species, and not *H. erectus*, that could be characterized as a successful colonizer, or 'the earliest cosmopolitan hominid species' (Tattersal and Schwartz 2009; *cf*. Dennell 2003). 'Success' and 'continuity', however, retain their relativity as archaeologically discernible realities also after 600 ka, as the discontinuous nature of the Italian Early-early Middle Pleistocene record vividly shows (Villa 2001; see below 3.2). Considering this palimpsest of intermittent early dispersal events, the scarcity of sites in the period separating Dmanisi (1.8 Ma) from Atapuerca TD6 (0.8 Ma) is most likely reflecting hominin incursions that failed to attain a more permanent character (*cf*. Dennell 2003). Perhaps it was only after 'Atapuerca times' and especially after *ca.* 600 ka that colonization attempts were successful and/or gained an archaeologically visible demographic momentum, which would in

---

[2] The quotations denote that the word threshold is used here only as a heuristically meaningful temporal line that helps us to grasp the wider patterns; suffice to mention that initially the 'threshold' was put at 500 ka, it was subsequently moved to 600/500 ka, and lately it has been suggested to go a little more further back at 650 (McNabb 2005). Viewed in the time-frames of the Pleistocene, such differences of 100-150 ka do not change significantly the message coming out of this bipartite division.

turn allow further range expansion (*cf.* Roebroeks 2001, 442).

Notwithstanding fluctuating hominin numbers (and possibly frequent regional extinctions), if not genes, then ideas and technologies could have been exchanged during migration events. In the Out-of-Africa narrative, these migration pulses are thought to have involved three main routes. The westernmost engages crossings of the Gibraltar Straits (fig. 2.1), but claims for movements across the Straits (*e.g.* Arribas and Palmqvist 1999) have been repeatedly disputed (*e.g.* Straus 2001; Derricourt 2005; Carbonell and Rodriguez 2006; O'Regan *et al.* in press). Even more compellingly rejected is the likelihood of contacts between N. Africa and Italy through the Sicilian Channel (Villa 2001). A third route, which does not involve sea-crossings and it is so far considered as the strongest candidate, involves the Levant, Asia Minor/Near East and the Balkans (Bar-Yosef 1994, 1998; Darlas 1995a; Dennell and Roebroeks 1996; Runnels 1995; Straus 2001; Panagopoulou *et al.* 2006; Carbonell and Rodriguez 2006; van der Made and Mateos 2010). Passing through familiar palaeoenvironments, *i.e.* similar to those of the African open grasslands, hominins could have moved towards inland Europe by following the Palestine corridor into Asia Minor and the Balkans. As noted in section 6.4, there was no marine connection between the Black Sea and the Aegean until the Late Pleistocene: both the Dardanelles and the Bosporus Strait were land-bridges, as it was also much of the Aegean Sea before about the penultimate glacial period and during (at least) the glacial periods of the Early and most of the Middle Pleistocene. The semi-arid, continental environments of the Anatolian plateaus, marked by the ranges of Taurus and Pontic mountains on its respectively southern and northern margins, may have acted as barriers, but the role of Anatolia as a bridge cannot be ruled out, in view of some new discoveries there (*cf.* Kuhn 2010).

What can be relatively safely stated is that, during the greatest parts of the Early and Middle Pleistocene, the Aegean Sea would *not* have always been a barrier, but instead, its emergent land-masses would have enabled direct biogeographic connections between Anatolia/Southwest Asia and the southernmost part of the Balkan refugia, namely the Greek Peninsula. In that sense, Greece lies within not only the aforementioned 'eastern route' of African-Eurasian contacts, but also amidst the most probable route(s) for *east-to-west intra-Eurasian movements*. Dmanisi presents a similar case: its location provides support to the importance of the 'eastern route'; its fauna is of predominantly European affinities, and it is in a region with a climate and a physiography comparable to that of Greece (Gabunia *et al.* 2000). Recently, it has been stressed that "the area of SE Europe and SW Asia around the Black Sea […] is the area where the humid faunas of Europe and Northern Asia intergrade with the faunas that lived in the arid area that extends from N. Africa to Central Asia" (van der Made and Mateos 2010, 196). In fact, the same study indicates that the majority of Pleistocene species dispersing into Western Europe originate in Asia, and that human dispersal into Western and Central Europe may have involved populations living in southern or central Asia. On the other hand, the widely-held view that *Homo* would have moved together with other taxa, for instance as part of broader 'faunal events', has been challenged (O'Regan *et al.* in press). Yet, there is one important conclusion from the research of O'Regan and colleagues (ibid): in the Afro-Eurasian Pliocene and Pleistocene, the predominant pattern of dispersal was east-west rather than north-south, in other words, between Europe and Asia, rather than Africa. The same team had pointed out earlier that faunal exchanges between Africa and the Levant were minimal during the Middle Pleistocene (O'Regan *et al.* 2005).

Essentially in the same line, a study of almost the entire hominin fossil dental record of the late Pliocene and Pleistocene suggests that "the evolutionary courses of the Eurasian and the African continents were relatively independent for a long period and that the impact of Asia in the colonization of Europe was stronger than that of Africa" (Martinón-Torres *et al.* 2007). This conclusion is echoing earlier calls for "attention to the comparability of data sets [in this case: between Africa and Asia] when evaluating whether or not the absence of hominins [for that matter, in Asia] is more than the outcome of taphonomic circumstance or the history of fieldwork" (Dennell and Roebroeks 2005, 1103): Asia includes vast areas that remain unexplored and it still keeps yielding surprises (*e.g.* Flores, Dmanisi). Thus, before assuming that a hominin (*e.g. H. ergaster*) migrated from Africa into Asia, researchers need comparable data sets to justifiably infer that it was indeed absent before the date of its first appearance, *i.e.* to assess its 'last probable absence'. Obviously, the latter is hardly ever safely demonstrable, as the 700,000-years-old site of Pakefield (southern England) exemplifies: until 2005 no convincing artefacts had been found there, despite two centuries of investigations of the Cromer Forest-bed Formation, in which the site is included (Parfitt *et al.* 2005). The latter site is currently the earliest known in Europe north of the Alps, and it is worth mentioning here that, similar to the oldest site in Eurasia (Dmanisi), its environmental context indicates a warm and seasonally dry Mediterranean climate (ibid). Only few of the artefacts from Pakefield were retrieved from fluvial silts and overbank sediments (ibid) and such fine-grained contexts are overall exceptional for early Pleistocene archaeology. When a coarse-grained matrix (*e.g.* of river gravels) is combined with a small assemblage of a few taxa of mostly large species, the comparatively small and fragile remains of hominins are unlikely to be preserved (*cf.* Dennell and Roebroeks 2005, 1100 for the biasing effects of this situation on the Asian records). This applies also to caves, cavities and open fissures, notwithstanding the enhanced chances of preservation in such settings (*e.g.* Simms 1994) or the fact that these are often the key sources of fossil vertebrate remains (*e.g.* see Athanassiou 2002 for the faunas of Thessaly, chapter 4). The problems surrounding the excavation of Petralona Cave (4.2.1) does not render it a good example to explore such issues, but the finding of a *H. heidelbergensis* cranium allows us to address the relevant question: if we exclude for the moment the Greek artefactual testimony, should the date of the Petralona specimen (*ca.* 200 ka) be considered as the 'first appearance date' of that species in Greece? Assessing the 'last probable absence' of *H. heidelbergensis* in Greece is not a primary focus, but the research presented here indicates that a negative answer to this question is most likely. Considering the history of palaeontological and archaeological investigations in Greece, the difficulty in assessing 'last probable absences' lies only partly in the degree of research intensity: the large gaps in the palaeontological and palaeoanthropological archives suggest that the core of the problem revolves around the effects of geomorphic processes that have resulted in a significantly fragmented geoarchaeological data set.